



Association for Environmental Archaeology

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Chair's piece

Richard Thomas, AEA Chair

The AEA spring meeting (to be held at the University of Nottingham) will soon be upon us and the theme of the conference is one that is very close to my own research (and personal) interests: food. Patterns of food choice, preparation and consumption reflect upon multiple, often intersecting, aspects of individuals and communities in the past, including group identities, gender relations, religious/ritual practices and status differences: in this sense food is an active form of material culture. Environmental archaeologists are particularly well placed to explore these dimensions of past human society, because plant remains, animal bones and residues, are frequently the product of consumption behaviours. The aim of this conference is to explore some of these issues in relation to the long-distance movement of people, foods and ideas about food, which together result in the creation of 'foodscapes' (<http://www.nottingham.ac.uk/archaeology/research/conferences/foodscapes/foodscapes.aspx>).

In addition to the traditional conference presentations, this conference will witness the first AEA meeting at which Ignite-format presentations are delivered.

This is a relatively new format of presentation in which the speakers talk to the audience on a subject for a short period of time: in this case 20 automated slides in five minutes. I am very much looking forward to being 'ignited'.

If you are unable to make the conference, then you can also follow progress through our social media outlets on Twitter (@envarch) and Facebook (<https://www.facebook.com/pages/Association-for-Environmental-Archaeology/206667162689371>). Social media is an increasingly important venue for promoting the activities of the Association and connecting members and non-members with disciplinary developments (Figure 1).

So please do join in the conversation surrounding the conference – perhaps if I do not see some of you there in person, I will meet you in a virtual space!



Figure 1: number of facebook 'likes' over the past three years

PALAIKASTRO

Urban – landscape interactions in Minoan Crete

The Bronze Age period in Crete, known as Minoan, has been the centre of intensive research since the late 19th century. Iconic palace sites, such as Knossos, Phaistos and Malia, have revealed a particularly rich archaeology and material culture and have been incorporated into the great narratives of the past. Despite, or perhaps because of, this wealth of spectacular architecture, pottery and artefacts, environmental archaeology has largely remained at the margins of Cretan research. Yet it is perishable material, food and drink, olive oil, wine and cereals, that have been employed in theoretical models to explain the emergence of palatial societies and/or the workings of political factions, elites and authorities (e.g. Renfrew 1972; Halstead and O’Shea 1982; Hamilakis 1999; Galaty *et al.* 2011).

In response to this need for a tighter incorporation of primary, bio-archaeological data to address some of the burning questions of Minoan archaeology, the new excavations at the Bronze Age site of Palaikastro placed environmental archaeology at the core of this research initiative. This 5-year project, ‘PALAP’ (Palace and Landscape at Palaikastro), began in 2012 and is led by Prof. Carl Knappett (University of Toronto, Canada), Dr Nicoletta Momigliano (University of Bristol, UK) and Dr Alexandra Livarda (University of Nottingham, UK). As a result Palaikastro became the first site in Crete, and one of the few in the Aegean, following the example set at sites such as Paliambela Kolindros in northern Greece, where environmental archaeology became incorporated into the project’s research questions from its inception. It is also the first site in Crete where a systematic soil sampling strategy has been employed in order to collect bio-archaeological material from every excavated unit (see Livarda and Kotzamani 2014), allowing a fine-grained level of analysis. The environmental team has three strands, all of which are closely working together for the integration of their results: bio-archaeology, palaeoenvironment, and landscape archaeology (Box 1: end of article).

Palaikastro is a large Bronze Age Minoan town covering well over 40 hectares and lying a few hundred metres away from the sea. It is situated in the far east of Crete, about 25 km north of Zakros and 8 km south of the endemic palm (*Phoenix theophrasti*) forest of Vai. Palaikastro was first excavated from 1902 to 1906 by Bosanquet, followed by another two phases of excavation (1962-3 by Sackett and Popham and 1986-2003 by Sackett, Driessen and MacGillivray). These investigations revealed important information, shedding light on aspects of life in this rather atypical Minoan settlement: despite its extended size, it seems to have lacked any central ‘palatial’ building. It was organised in substantial town blocks or neighbourhoods that were in use from the Early Bronze Age through to the later stages of the Late Bronze Age, spanning a period of about 1500 years.

Despite the many years of research several questions remained unanswered, particularly in regards to the relationship of the town with its territory. How did the town manage

its resources and how did its inhabitants interact with their environment? How sustainable was the use of the surrounding landscape? What was the impact of urban nucleation on the Mediterranean landscape? How did the cultural landscape in East Crete develop? What was the role of this town within the broader socio-economic arena of the Bronze Age habitation of the island? These are just some of the questions that the current team is addressing.

The first three seasons of excavations have unearthed a new town block with evidence of a range of activities, while the landscape, coring and bio-archaeological work have already demonstrated the great potential in providing new insights into the socio-economic organisation of this Bronze Age town. An extensive radiocarbon dating programme is currently planned in order to create a high-resolution chronological framework for the contextualisation of the environmental data, and cores with up to 8m in depth have been



Fig.1: Santiago Riera cleaning a palynological core
(Picture by M.Andonova)

obtained from the town’s territory, yielding evidence of good pollen preservation (Fig. 1). The combined results of the landscape, palynological, anthracological and geoarchaeological investigation have started delineating the environmental context and the interactions of people with their territory, with the preliminary observations suggesting significant erosion phases that would have required appropriate resource management. At the same time, the on-site recovery of bio-archaeological remains (Fig. 2) show that a wide variety of typical plants and animals of Bronze Crete were utilised, alongside fish and a large variety of marine molluscs indigenous to the seas around Crete that come from diverse coastal environments, both from shallow and deeper water zones. Overall, a complex management of the sea and land-



Fig. 2: Flotation at Palaikastro (left to right Leslie Bode, Alexandra Livarda and Alexandra Kriti)

scape is emerging, both of which seem to have been acting as complementary agents in the life of the town.

The landscape research (Fig. 3) has been key in delineating the economy of the area. At least five Minoan farmsteads have been identified in the town’s territory all of which share

similar characteristics in terms of configuration and location. They are associated with terraces, which are related with check dams for moisture and sediment retention (consistent with those found in other areas of eastern Crete) and are surrounded by perimeter walls, most likely for their protection from animals. Enclosures and other features associated with pastoral activities have been identified in the vicinity of the outer areas of these walls. The next stage of research will incorporate these findings with the on- and off-site palaeoenvironmental results in order to understand the agricultural husbandry and farming methods to ultimately reconstruct the intensity and scale of these activities and identify their degree of integration.

The sea was also an important resource for the town. Among other functions, it was the source of shells for the production of dyes. A very large number of *Hexaplex trunculus* (purple shells) have been recovered from specific contexts in the new town block, the fragmented state of which suggests purple-dye manufacture. This finding is significant not only because it is consistent with the results of previous excavations at Palaikastro (Reese 1987), but mainly because it is one of the few examples of large domestic deposits with purple-dye production waste in the whole Aegean (Ruscillo 2006; Veropoulidou *et al.* 2008; Apostolakou *et al.* 2012; Brogan *et al.* 2012).

In order to better understand prehistoric purple dye production we set up an experiment during the 2014 season using fresh purple molluscs (Fig. 4). The experiment was designed by Dr Rena Veropoulidou and was conducted in collaboration with Dr Alexandra Livarda and Miss Catherine Neale, whose undergraduate dissertation at the University of Nottingham forms part of this project, as well as with the keen support



Fig.3: Hector Orenge preparing the drone during the landscape work at Palaikastro



Fig.4: Alexandra Livarda crushing shells during the purple dye preparation experiment

and help of several members of the project. Purple shells were collected from Palaikastro and the nearby town of Siteia and they were crushed to extract the molluscs for the production of the dye. Stone tools were used for crushing the shells, and these were kept for micro-wear analysis. Two recipes were devised for the production of dye and different fabrics were used in the experiment. The liquid produced during the dyeing procedure was kept in a jar for chemical analysis. Every step of the procedure was recorded and photographed, and the results are currently under study.

In summer 2015 we will carry out the last excavation season at Palaikastro, which will be followed by study seasons and more laboratory analyses. This further work will enable us to weave together fresh narratives concerning the story of the rise and the final demise of this important seaside town in Bronze Age Crete.

Alexandra Livarda, Hector Orengo and Rena Veropoulidou

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Box 1: The environmental team at Palaikastro

Directors

Dr Alexandra Livarda (bio-archaeology team)
Dr Santiago Riera Mora (palaeoenvironmental team)
Dr Hector A. Orengo (landscape team)

Environmental Archaeology Team

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